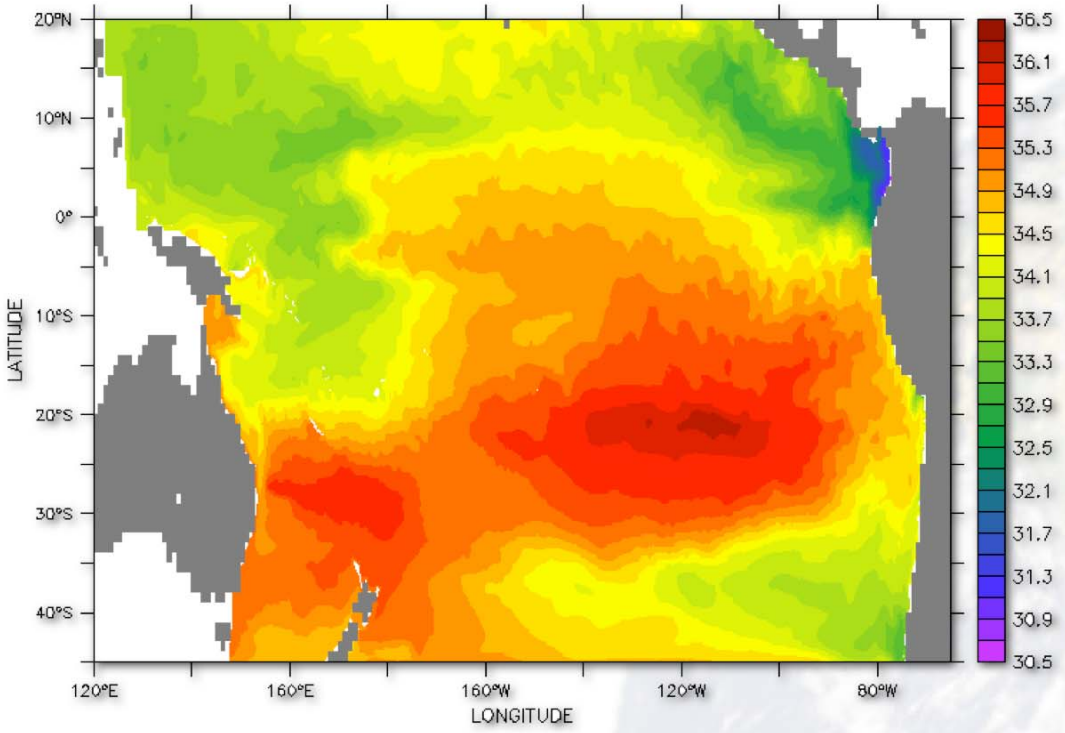
AQUARIUS highlights

Modeling the Salinity Pathways in the South Pacific



Simulated Salinity Fields Indicative of Variability to be Resolved by AQUARIUS Mission.

The eastern South Pacific Ocean is an area of high salinity variability, and where salinity anomalies are generated near the surface that later sink and propagate toward the western equatorial Pacific.

The figure above is a simulated surface salinity field for December 2004 from a run of GFDL's Modular Ocean Model. The model simulations are being used to investigate the role of remotely-forced salinity anomalies on oceanic equatorial variability.

The simulation is initialized from a state of rest and forced by a surface wind and buoyancy climatological values for 60 years. The model is then further integrated using monthly averaged fields from NCEP's surface weather analyses for the years 1949-2004.

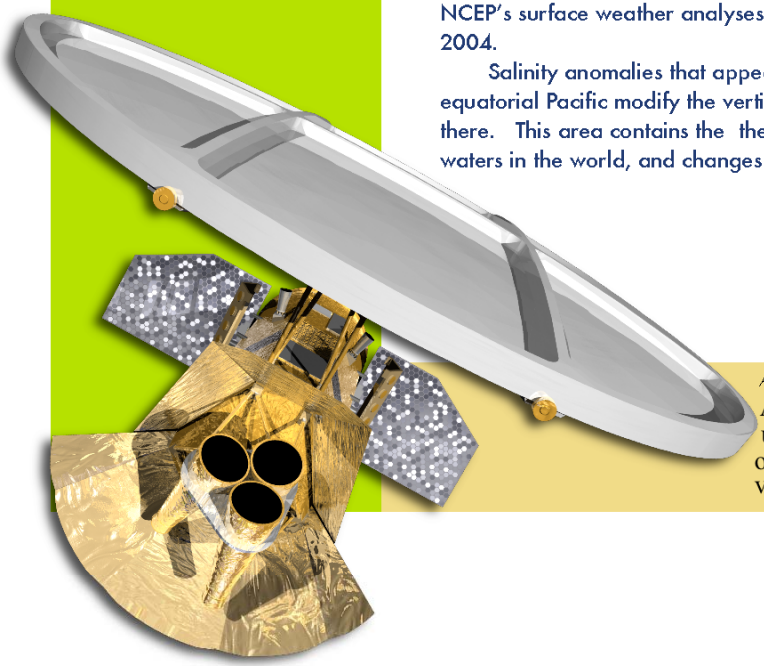
Salinity anomalies that appear in the western equatorial Pacific modify the vertical stratification of there. This area contains the the warmest ocean waters in the world, and changes in the vertical stratification has effects on the way water is mixed vertically in this region. The mixing also affects the local interactions between the atmosphere and the ocean and the depth to which the forcing from the atmosphere penetrates into the ocean column.

Since ocean- atmosphere interactions in this region are crucial to El Niño and La Niña development, it is important to understand those processes which affect those interactions. It is believed that more accurate knowledge of these processes will lead to improved prediction of these phenomena.

This study will not only investigate the generation of salinity anomalies in the eastern South Pacific, it will also investigate the pathways that any anomalies generated must take to reach the western equatorial Pacific.

This research is sponsored by the Physical Oceanography program at NASA HQ. David Adamec is the Principal Investigator for this project.

Find more information on AQUARIUS at:
http://aquarius.gsfc.nasa.gov



AQUARIUS is a joint U.S. (NASA)/Argentine (Comisión Nacional de Actividades Espaciales [CONAE]) venture. The mission will help to understand the climatic interactions between the global water cycle and ocean circulation by systematically mapping the spatial and temporal variations of sea-surface salinity.